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VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION
P. O. BOX 402
MINERAL, VIRGINIA 23117

10 CFR 50.73

March 9, 1993

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

NAPS:MPW
Docket No. 50-338
License No. NPF-4

Dear Sirs:

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Unit 1.

Report No. 50-338/93-005-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Corporate Management Safety Review Committee for its review.

Very Truly Yours,

G. E. Kane
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station



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NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| North Anna Power Station Unit 1 | 0 5 0 0 0 3 3 8 | 1 OF 0 3 |

TITLE (4)
LOSS OF 1H EMERGENCY BUS DUE TO FEEDER BREAKERS TRIPPING OPEN UPON DEGRADED VOLTAGE AUXIILIARY RELAY FAILURE

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| 0 2 | 1 9 | 9 3 | 9 3 | - 0 0 5 | - 0 0 | 0 3 | 0 9 | 9 3 | | 0 5 0 0 0 |
| | | | | | | | | | | DOCKET NUMBER(S) 0 5 0 0 0 |

OPERATING MODE (9): 6
POWER LEVEL (10): 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

| | | | |
|---|---|---|---|
| 20.402(b) | 20.405(c) | [X] 50.73(a)(2)(iv) | 73.71(b) |
| 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| 20.405(a)(1)(iii) | 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| G. E. Kane | AREA CODE 7 0 3 8 9 4 - 2 1 0 1 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|---|---|---|---|---|---|---|---|---|---|
| B | E S | 0 0 2 7 | W 1 2 0 | Y | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)
[X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR


ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On February 19, 1993, at 1530 hours with Unit 1 defueled the 1H 4160 volt emergency bus was de-energized as a result of the 1H emergency bus feeder breakers tripping open. The 1H emergency diesel generator had been removed from service to prevent an unnecessary start while calibrating the 90 percent degraded voltage sensing relays. Upon completing the calibration two of three normally energized auxiliary relays failed to reset when they were energized. As a result the circuit interpreted this action as a degraded voltage condition on B and C phases which caused the feeder breakers to trip open causing a loss of power to the 1H emergency bus. The 1H emergency bus was energized at 1647 hours. A four hour report was made to the NRC pursuant to 10CFR50.72(b)(2)(ii). This event is reportable pursuant to 10CFR50.73 (a)(2)(iv).

The cause of the event is component failure of two degraded voltage auxiliary relays.

No significant safety consequences resulted from the event because the 1J 4160 volt emergency bus was energized and remained fully operable throughout this event. Therefore, the health and safety of the public were not affected at any time during this event.

1.0 Description of the Event

On February 19, 1993, at 1530 hours with Unit 1 defueled, the 1H 4160 volt emergency bus (EIIS System Identifier EK, Component Identifier BU) was de-energized as a result of the 1H emergency bus feeder breakers (EIIS System Identifier EK, Component Identifier 52) tripping open. The 1H emergency diesel generator (EIIS System Identifier EK, Component Identifier DG) had been removed from service to prevent an unnecessary start while calibrating the 90 percent degraded voltage sensing relays. Upon completing the calibration two of three normally energized auxiliary relays (EIIS System Identifier EK, Component Identifier RLY) failed to reset when they were energized. As a result the circuit interpreted this action as a degraded voltage condition on B and C phases which caused the feeder breakers to trip open causing a loss of power to the 1H emergency bus. The 1H emergency bus was re-energized at 1647 hours. A four hour report was made to the NRC pursuant to 10CFR50.72(b)(2)(ii). This event is reportable pursuant to 10CFR50.73 (a)(2)(iv).

All channel calibrations were completed satisfactorily. When the DC control fuses were replaced to return the undervoltage trip circuits to the normal configuration two of three normally energized auxiliary relays, 27XB-1H1 and 27XC-1H1 (Westinghouse Industrial Control Relay Type AR No. ARD440V), failed to reset thereby initiating the time delay trip. The timer relay (EIIS System Identifier JE, Component Identifier 62) will energize 56 seconds after a degraded voltage signal is sensed on 2 of 3 phases. After the 56 seconds elapsed the degraded voltage circuit tripped the normal 1H emergency bus feeder breakers as designed. This resulted in a loss of power to the 1H 4160 volt emergency bus. The 1H 4160 volt emergency bus was energized, at 1647 hours, from the normal feed (F transfer bus) (EIIS System Identifier EB, Component Identifier BU).

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from the event because the 1J 4160 volt emergency bus was energized and remained fully operable throughout this event. Therefore, the health and safety of the public were not affected at any time during this event.

3.0 Cause of the Event

The cause of the event is component failure of two degraded voltage auxiliary relays.

4.0 Immediate Corrective Actions

Operations procedure 1-AP-10, Loss of Electrical Power, was entered to diagnose the problem. The 1H 4160 volt emergency bus was energized using normal power from transfer bus F.

5.0 Additional Corrective Actions

The two failed auxiliary relays, 27XB-1H1 and 27XC-1H1, were replaced. Functional testing of the new relays were completed satisfactorily.

6.0 Actions to Prevent Recurrence

Periodic test procedure 1-PT-36.13H and 13J will be revised to include anticipatory steps, to preclude an emergency bus trip due to failure of an auxiliary relay, when returning the control circuits to their normal configuration following completion of the channel calibrations.

The Unit 2 periodic test procedures will be reviewed and changes made as necessary to ensure consistency with Unit 1.

Corrective actions resulting from a previous event, LER N2-91-006-00, include an action plan that will identify and address ARD relay problem areas.

7.0 Similar Events

LER N1-87-013-00, dated July 10, 1987, identified that power to the 1H 4160 volt emergency bus was lost when the timer relay in the degraded voltage circuitry was energized during the performance of a functional test for the timer relay set point check. This occurred when one wire on a terminal being used for test purposes was not lifted as intended by the procedure.

LER N2-91-006-00, dated September 19, 1991, identified the failure of a timer relay in the 2J emergency bus degraded voltage circuit during functional testing.

8.0 Additional Information

Unit 2 was operating at 100 percent power, Mode 1, and was not affected by this event.